

OBSERVATIONS

ON THE

MEDICINAL SPRINGS OF HARROGATE.


(Extracted from the MEDICAL TIMES AND GAZETTE.)

BY

GEORGE KENNION, M.D., F.R.C.P.

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THERE are two reasons which induce me to offer to your readers a short account of Harrogate and its Medicinal springs. One reason is that so little is generally known about the place, and the vast resources which it presents to invalids ; the other, that, to the large and valuable *répertoire* which Nature has already so bountifully given us, we have lately had a very important addition in the discovery, by Professor Sheridan Muspratt, of the existence of proto-chloride of iron in considerable quantity in one of our springs—thus constituting it a chalybeate water of, in all probability, very great therapeutic value, and one which, in respect of this constituent, is without a prototype.

Harrogate is commonly divided into two parts, which are respectively named High and Low Harrogate. The greater part of what is called High Harrogate is built upon a high table land, which is elevated 420 feet above the level of the sea, and commands a magnificent and extensive view, while Low Harrogate is situated in a basin, which is bounded on

the east and south sides by the high ground on which High Harrogate is built, and on the west by “ Harlow-hill.” The upper stratum of the soil is sandstone, below this is a bed of shale in some parts, of clay in others, and below this again is carboniferous limestone. The air of Harrogate is peculiarly pure and bracing, and, as is commonly remarked, possesses more of the freshness and elasticity of the sea air than almost any other inland place. The position of Harrogate being such as I have described it, gives us the advantage of two distinct climates : the air of Low Harrogate being comparatively warm, even while a strong and cold wind may be blowing over the “ Stray ” or common which extends throughout High Harrogate, and around which many of the best hotels and houses are built. The sandy nature of the soil allows of the paths being immediately dried up, after even the heaviest rains ; and, whatever may be the cause, the fact remains that while cholera, in different epidemics, has been raging all round, not a single case has ever occurred in Harrogate. Rinderpest so far, I am thankful to say, is unknown in the place, and fevers, brought here by visitors, never spread. The country around Harrogate is, for the most part, well cultivated, the scenery picturesque, and the objects of interest for excursions are very numerous. Such is a brief topographical description of Harrogate. I proceed now to describe that which especially has conduced to the reputation of the place, viz., its Medicinal springs :—

It has long been a general opinion, and one which is shared in by very many, even in the Medical Profession, that the only, or at all events the principal, mineral water in Harrogate is the well-known sulphur water—“ the Harrogate Water ” *par excellence*, and further, that the chief class of complaints for which this “ Harrogate water ” is a remedy, is the large and troublesome class of cutaneous diseases. I will enumerate the different kinds of water which are found here :—

1. Strong sulphureous waters, rich in chlorides.
2. Mild sulphureous waters, containing alkaline salts.
3. Saline chalybeate waters.
4. Pure chalybeate waters.(a)

This statement of the distinct varieties of waters which are found here will show how mistaken the former opinion is—viz., as to the existence of only one kind of water, and I will point out as I proceed, that cutaneous diseases form a very small part of those which are benefitted by the waters, and that there are many kinds of cutaneous diseases which are much more satisfactorily treated by some of the saline chalybeate waters, and which are indeed aggravated by the sulphur waters. As regards the variety of waters here, I believe that I am correct in asserting that in no place, either in this country or in Europe, is there so great a choice of mineral springs, all of them valuable as therapeutic agents, and all in constant use in the large variety of cases which present themselves here for treatment.

The sulphureous waters are used externally as well as internally. The important difference between the two classes of sulphur water which I have above named, consists not only in the relative amount of sulphuretted hydrogen which they contain,(b) but also in the quantity, as well as the quality of their saline ingredients. The stronger waters contain, according to Dr. Hoffman's analysis, about gr. 15 of sulphide of sodium (representing about c.i. 26 of sul-

(a) In mentioning these four varieties I must be understood as merely indicating them as varieties ; there are, I believe, no less than fifty different springs.

(b) Strictly speaking, as many of my readers are aware, sulphuretted hydrogen does not exist, as such, in these waters as they arise from the spring in this their pure state ; the chemical condition in which sulphur exists is in combination with sodium, as sulphide of sodium. Exposed, however, for a short time to the air, this combination is destroyed, and free sulphuretted hydrogen and soda are the results.

phuretted hydrogen gas) in each gallon, and nearly gr. 1100 of saline matter, of which about gr. 780 consists of chloride of sodium, the remaining salts consisting chiefly of the chlorides of calcium, magnesium, and potassium. The milder sulphureous waters contain very much less of sulphide of sodium, (on an average—for there are at least four of these springs—they contain about gr. 2 in each gallon), and about a fourth part of the amount of saline matter which exists in the stronger waters; and whereas in these the most active saline ingredient is chloride of sodium, in those the comparatively predominant salts are alkaline carbonates. I need hardly advert to the great advantage which we possess in having this variety in the constitution of the sulphureous springs.

The physiological effects of sulphuretted hydrogen in moderate doses appear to be chiefly exerted on the great nervous centres, on the mucous membranes, and upon the skin. On the nervous system it acts at first as a stimulant, but if its use be too long continued, or if it is taken in too large a quantity, it acts powerfully as a sedative, or even as a narcotic poison. On the skin and upon the mucous membranes it has a directly stimulating effect, and peculiarly is this the case as regards the bronchial mucous membrane, for which it would seem to have a remarkable affinity. M. Claude Bernard, M. Demarquay, and others have clearly shown that when sulphuretted hydrogen is injected into the blood, it is immediately (*i.e.*, within twenty-five seconds) eliminated from the lungs. Böcker believes that under its continued use carbonic acid is more largely exhaled from the lungs, and uric acid excreted in larger quantities from the kidneys. I think that my own observations tend to confirm the latter opinion; but it appears to me probable that both these effects, the former directly and the latter indirectly, are only the natural result of the quickened passage of blood through the lungs.

From this brief account of the physiological effects of sul-

phuretted hydrogen, we can readily understand how important is the part which it must play, when its energies are rightly directed against disease of those organs or tissues upon which its influences are chiefly exerted; and, when we find its action associated, as it is in these waters, with that of the salts which they contain, we need not wonder at the reputation which the waters of Harrogate have obtained, nor that the number of diseases to which they are applicable is so large.

On the physiological and therapeutic effects of these saline matters I need not dwell for a moment, and I therefore proceed to mention some of the chief classes of disease which are amenable to the action of these waters, and in doing so I will commence with cutaneous diseases.

In the frequent cases of lepra, psoriasis, and pityriasis, these waters are peculiarly beneficial in their external as well as their internal use. There are few of these cases which are not more or less connected with a gouty predisposition, and the stronger sulphureous waters, acting as they do very powerfully upon the liver, the portal system, and the kidneys, by removing congestion and increasing secretion, have in this their eliminative action a directly curative effect upon these diseases. The external use of these waters has, probably, something more of a specific effect in these diseases, particularly if the opinion of Hebra is correct that sulphur, in the form of alkaline sulphurets, induces a hyperæmic state of the affected integuments, stimulating the growth of epidermis, and thus accelerating the metamorphosis of tissue. In pustular diseases of the skin, of which we may take impetigo as a type, these waters are almost invariably useful, both in their internal and external use. In all these cases there is probably some morbid condition of the blood (allied, as I am disposed to think, to that hyperfibrinous state which exists very often where there is a tendency to boils), to get rid of which Nature establishes this discharge,

and we help her in this effort by so administering the waters as to produce their eliminative action through the different emunctories of the system.

In vesicular diseases of the skin, as a general rule, I do not think the internal use of the sulphureous waters so beneficial as in the squamous and pustular diseases. My usual practice in these cases is to combine the external use of the sulphur water (which I consider invaluable in these diseases, either in the stronger or the milder variety, according to the nature of the case) with the internal administration of one or other of the saline chalybeate waters. The results of observation lead me generally to use the same mode of treatment in most of the papular diseases of the skin, such as lichen and prurigo, in which, while the inflammatory condition of the skin is of an asthenic character, there is a want of healthy tone of the general system.

In the pustular diseases which attack the face—acne, sycosis, and mentagra—connected as they almost always are with a thickened unhealthy condition of the blood, I find the external use of the sulphur waters very beneficial ; but I find the internal administration of the saline chalybeate waters produce the greatest amount of benefit to the general health.

Thus we see that sulphur waters are not necessarily a cure for cutaneous diseases, and that their salutary influence is chiefly felt by their power of removing those morbid states of the general health which are the parents of these diseases. It seems, indeed, almost an absurdity to press this truism ; but the daily experience of this place, and of the preconceived views of the subject with which many invalids come here, shows that it is not unnecessary to do so.

Of what are commonly called “blood diseases,” I may mention cases of secondary and tertiary syphilis as being very much benefited by the use of sulphureous waters and sulphur baths. The same remark applies to a very large proportion of

scrofulous cases. The observations of M. Grimaud, Andrien, and others go far to prove the value of sulphureous waters in cases where there is actual deposit of tubercle in the lungs (c). To a certain degree this effect may be due to the generally improved condition of health in which such cases are placed by the use of mineral waters of this class, and by the pure air which they breathe here; (d) but the remarkable circumstance already alluded to, and first ascertained by M. Claude Bernard, of the pulmonary mucous membrane being the chosen point of elimination from the system of sulphuretted hydrogen, cannot fail of engendering the belief that as upon the skin in some cases, so in others upon this membrane sulphuretted hydrogen may produce a specific effect, increasing the local circulation, stimulating the growth of epithelium, and accelerating the metamorphosis of tissue. It is probably due to some such cause that cases of chronic bronchitis are so often benefited here, and that the peculiar follicular disease of the throat, known as "clergyman's sore-throat," not unfrequently yields to this mode of treatment.

In gout and rheumatism, with all their widely-spread ramifications, these waters are remarkably beneficial, acting

(c) I am aware, indeed, that my friend, Dr. Edwin Lee (*vide* "Watering Places of England"), is disposed to break a lance with me on this subject, chiefly on the ground that the quantity of saline matter in the sulphur water so rapidly excites the alimentary mucous membrane, that it does not give time for the sulphuretted hydrogen to be absorbed into the blood. In these cases, however, where the desideratum is to produce a constitutional, and not a purgative effect, it is very easy so to regulate the dose, as well as to choose the particular spring, as to allow of the system being thoroughly impregnated with sulphur. It is true, as Dr. Edwin Lee suggests, that I have not seen any such cases *cured* by this mode of treatment; but I can testify to the great improvement in the general health, and strength, and nutrition, which many cases of this kind do experience here. Beyond this I certainly cannot go; but is not this in itself a great point gained?

(d) Dr. Thorowgood's remarks upon this subject are very valuable ("Change of Air in the Treatment of Phthisis," second edition).

powerfully upon the secretions and excretions, purifying the blood, as they thus do, from so much that contaminates it, renovating the powers of the digestive organs by removing those local congestions which interfere with the healthy discharge of their functions, we should naturally expect, what we actually find, that their efficacy in these cases is immense; and when we bear in mind how large a proportion of chronic functional disorders have, as their basis, a foundation of gout, we cannot fail to remark how wide a field of successful practice is here opened to us. In one form, indeed, both of gout and of rheumatism, viz., where the effusions round or within the joints have become hard and concrete, we must, I fear, in all fairness, concede the palm to Buxton. I do not mean to imply that such cases are not cured here (the contrary, indeed, is the case), but I must frankly admit that Buxton does more good in these cases than Harrogate can effect. I believe, however, that much benefit accrues even to such cases as these, if they come here and drink the sulphur water before they go to Buxton. The reverse plan is often tried, but with much less advantage to the patient. I am happy in being corroborated in this opinion by my friend, Dr. Robertson, of Buxton, whose ample experience in all that relates to that important place is so well known. In reference to this class of cases I have been in the habit of observing that while Buxton deals with the past, Harrogate deals with the present and the future.

Connected as such cases are with a gouty diathesis, I may here remark upon the great relief which patients experience here who are afflicted with "gravel." The thorough washing through which the tubes of the kidneys undergo during a course of these waters, mechanically clears away any sandy deposit which may have lodged in them. If this deposit has gone on to the extent of forming a small calculus, their effect is to dislodge it before it is too large to

pass through the ureters ; while the increased flow of urine helps to carry it through the bladder. The mild alkaline sulphureous spring, which is largely resorted to for this purpose, has a solvent effect upon these deposits almost as powerful as some of the springs at Vichy ; indeed, patients who have been at Vichy have told me, not infrequently, that they have derived more advantage from drinking this particular spring than from the use of any of those at Vichy. Another form of blood disease which is almost invariably removed by the action of these waters is that of lead-poisoning—I do not remember to have seen a case which was not greatly relieved, if not cured, by their use.

There is another class of cases which are most frequently benefited by the use of the stronger sulphureous waters—viz., those of uterine congestion, either active or passive : cases where we find menorrhagia on the one hand, and on the other hand dysmenorrhœa, or even amenorrhœa.

As a general rule I do not advise the internal administration of these waters in organic affections of the nervous system. There are some cases, however, of paralysis of old standing in which the external use of the strong sulphur water is beneficial ; and in that peculiar and, until lately, little understood disease known as *progressive locomotor ataxie*, Dr. Althaus and others have found much benefit from the use of sulphureous baths. Dr. Brown-Séquard also recommends a trial of these baths in some cases of reflex paralysis.

In the large majority of the diseases to which I have adverted as being remediable by the action of these waters, there exists, or has existed, a disordered condition of some portion of the digestive organs, and there can be no doubt that in a very large proportion of these cases, the organ which is chiefly in fault in the first instance is the liver. Passive congestion of the liver, vascular as well as biliary, with all its long train of consequences—

congestion of the portal system, thickened bile, constipation, indigestion. I cannot describe these cases in more graphic words than those of Dr. Chambers (Lectures, Chiefly Clinical, p. 524). "In these cases," he says, "there is a dinginess and "darkness of complexion, and the stools are scanty. The skin "gets greasy and opaque, the countenance puffy and bloated, "sometimes thin and pale, the lower eyelid especially, sallow "and discoloured. The sebaceous follicles on the alæ nasi are "stopped up with black matter. There is seldom (at first) "any decided emaciation, nor is there always even loss of "muscular power, but there is great sluggishness of body "and apathy of mind, and there is a miserable want of decision "and energy. The natural end of this state of things, if left "unchecked, is gradual progress from bad to worse. The "decrease of destructive assimilation loads the tissues with "effete matter, useless for the purposes of life, and a constant "source of general discomfort. This impedes the constructive "assimilation of food; growth is arrested; the blood is not "renewed; and hence progressive anæmia, weakness, want "of nervous and muscular power, and probably, in the end, "the degeneration of one or more of the viscera, and death."

I know of no treatment by which cases of this description are so much benefited as by the use of these (the sulphureous) *or*, according to the circumstances of each individual case, *the saline chalybeate waters*; and hence it is that so very large a number of these cases are completely cured by the treatment which they undergo here.

It has been frequently made a question as to how far the benefit which patients derive from the use of mineral waters is dependent upon the actual imbibition and immersion to which they are subjected, while they are "using a course of waters," or upon the change of air and scene, and the complete release from the ordinary duties of their position in life, be that position what it may. Now, it has always appeared to me, that at a place like Harrogate, where we have so great a

variety of waters, we have a fair opportunity of testing this point: indeed, I may say, it is frequently tested *for* us. It is a matter of every-day occurrence, that people come here for the purpose of drinking “the water” and bathing, who are either directed by their Medical advisers at a distance (who, naturally, cannot be conversant with the different waters which there are here, and their very different effects), or, acting on their own judgment, or the advice of those whom they meet with here (all invalids think that what has cured them will cure their friends!) as to the particular waters and baths which they should use, after being here perhaps for two, three, or four weeks, find that they are not deriving the benefit which they had expected, or perhaps that they are “getting worse” every day, and then they apply for Medical advice upon the spot. It is found, perhaps, that they have been drinking “the wrong waters,” or too much water, or too little, or that in some way the waters have disagreed with them. They are then put upon a fresh plan of treatment, which results in a relief, or a cure of their symptoms. Now these patients have had from the first all the advantages which change of air and relaxation could bring them, but instead of improving in health, they have lost ground every day; then beginning a new and a better regulated plan as regards the use of the waters, they gradually regain their health, and at length go away more or less cured. Cases of this kind, I say, always appear to me a very conclusive test as to how much of the benefit which patients derive here is due to these adjuvantia, (adjuvantia undoubtedly they are, and of a very high order), and how much is really due to the waters.

A very few words will suffice to bring under the notice of your readers the important chalybeate springs with which Harrogate abounds; indeed, a bare enumeration of them is all which is required, for it would be almost an impertinence to occupy your columns, or the time of your readers, with any description of the cases which call for their use.

There are two principal springs from which the saline chalybeate waters are obtained : the one is popularly called the Kissengen spring, from a certain resemblance in its composition and its effects to the Ragozzi spring at Kissengen ; the other is that alluded to in the early part of this paper as containing protochloride of iron in considerable quantity. The former spring has been extensively used for several years, and is exceedingly valuable as a remedial agent in those very frequent cases—cases of every day's experience—where we require the combined action of an aperient, a diuretic, and a chalybeate. To some of these cases I have already adverted ; others will at once present themselves to the recollection of my readers.

Of the effects of the new spring alluded to as containing the protochloride of iron, I am unable as yet to write very confidently ; but so far as we have tried it during the few months which have elapsed since Dr. Muspratt first discovered the existence of this salt in the water, my own observation and that of the other Medical gentlemen in the place concur in leading us to form a very high opinion of its therapeutic value. Theoretically, from its composition (e), we should expect it to be very useful ; practically, I think we shall find that in

(e) I subjoin the analysis of this water as made by Professor Sheridan Muspratt, and Professor Miller, of King's College :—

Analysis of Chloride of Iron Spring.

	gr. in one gall.
Oxide of manganese	A trace
Chloride of calcium	138·43
Chloride of magnesium	84·39
Chloride of sodium	205·92
Chloride of potassium	3·84
Chloride of barium	6·78
Protochloride of iron	14·49
Protocarbonate of iron	11·62
	cub. in. in one gall.
Carbonic acid	26·28
Nitrogen	8·08

this spring we possess one of the most valuable, perhaps *the most valuable chalybeate water in Europe.*

In addition to these two very important springs, there are two powerful pure chalybeate springs, where the iron is found in the normal form of a bicarbonate.

P.S.—The lapse of two months since the above remarks were written has afforded me opportunities of using this newly-discovered spring somewhat extensively, and the result has been to confirm very amply the expectations which were raised of its great therapeutic value. Amongst other obvious cases where it may be used with advantage, I am now able to write with confidence as to its efficacy in cases of fatty degeneration of the heart.

HARROGATE,

April, 1866.

